REMARKS

In view of the foregoing amendments and following remarks responsive to the Office Action of October 18, 2004, Applicant respectfully requests favorable reconsideration of this application.

All claims presently stand rejected on prior art grounds.

The application originally contained seven independent claims, namely, claims 1, 8, 23, 31, 53, 66, and 73. However, as a result of the amendments set forth hereinabove, only three independent claims now remain pending, namely, claims 1, 8 and 53. All of the independent claims basically recite the same invention, but from different perspectives.

The present invention concerns a technique for simulating the channel surfing experience of cable television or broadcast television (and particularly the essentially instantaneous access to a new data stream when changing channels) in a transmission scheme that does not permit simultaneous transmission of all channels. For instance, in cable television and broadcast television, all channels are simultaneously transmitted to the customer's home. Thus, when a customer changes channels, the data stream (i.e., picture and sound) for the newly selected channel essentially appears instantaneously on his television. However, in certain types of transmission systems, e.g., some fiber-optic transmission systems, it is not possible to transmit all of the channels simultaneously to the home. In such systems, it would be annoying to a television viewer who has become accustomed to rapid channel surfing to have to wait the one or two seconds that it might take to send a request from the home to the central office and then for the central office to respond by stopping transmission of the previously watched channel and transmitting the newly selected channel.

The present invention aims to solve this problem. Particularly, in accordance with the invention, the customer's television or set top box includes a memory which stores samples of the data streams of each of the available channels received from the central office. The samples are updated frequently and might comprise half a dozen seconds of data stream for that channel. When the customer changes channels, while the customer is waiting for the actual switching to occur from the previously viewed channel to the newly selected channel, the set-top box sends out the stored sample corresponding to the newly selected channel. In this manner, the customer will have essentially instantaneous access to a small snippet of the program on that channel so that he can determine whether or not it is something he is interested in watching or whether he will continue surfing to the next channel. The sample should be updated frequently so that it is always representative of the actual program being shown on that channel at that time. In a preferred embodiment of the invention, if the customer remains on that channel for a particular period of time, e.g., four seconds, then the set-top box will then request the actual data stream for the newly selected channel from the central office. However, if the viewer continues to rapidly channel surf, the set top box will never actually send out a request for the data stream of that channel.

If the viewer stays on a channel long enough, when the stream switches over from the sample to the actual data stream for that channel, the viewer will most likely observe a jump or interruption in the stream. However, this should not be too disconcerting since it is unlikely that the customer will have obtained enough information about the program on that channel to care about the content of the portion of the stream that was jumped.

In all of the prior art rejections, the Office cites the Mao reference as disclosing the basic elements of the present invention. However, this reliance is misplaced as the

Mao reference is fundamentally different from the present invention. Particularly, like the present invention, Mao is intended to address the issue of minimizing the delay between selecting a new channel and actually receiving the data stream of that channel in a television transmission system in which all of the channels cannot be transmitted to the customer simultaneously. However, Mao addresses an entirely different issue than the present invention. As noted above, in the present invention, the local set top box of the viewer locally stores samples of all of the channels in the customer's set top box.

Mao addresses an entirely different issue unique to compressed data streams such as MPEG, which are not even mentioned in the present specification (although, of course, the present invention can be used with any data stream). Specifically, a receiver must synchronize with a compressed video stream before it can reproduce the data. Mao discloses a technique for reducing the time needed to synchronize with a compressed data stream. Furthermore, the portion of Mao that the Office alleges is relevant concerns the equipment at the central office, not the equipment local to the viewer.

More particularly, in Mao, the problem is that, in MPEG data streams, one cannot simply start receiving the data stream from any frame. In MPEG, there are "I frames" approximately every half second. An I frame contains complete information as to the content of that frame. The next approximately 15 frames of data are not traditional frames. Instead, the information transmitted corresponding to that frame is information describing the differences between that frame and the preceding frame. Accordingly, one can only join an MPEG data stream at an I frame. Accordingly, when one changes channels, in addition to all of the other factors contributing to the delay in actually receiving the stream corresponding to that channel, one may have to wait as much as

half a second just for an I frame to be located at the channel switching circuit in the central office (the BTD).

Mao addresses the issue of eliminating the wait for an I frame in an MPEG data stream. Particularly, in Mao, the BTD 12 receives all of the channels from an ATM network 26 simultaneously. The BTD buffers at least a long enough period of each data stream in a buffer 50 (figure 7) so that at least one I frame in each channel is in the buffer 50 at any given time. As stated by Mao at column 8, lines 17-21, a conventional BTD may already have a buffer that stores enough data of each channel so that an I frame is always in the buffer for each channel. Thus, Mao's invention may not require any additional hardware over a conventional BTD. The innovation of Mao is that Mao maintains and constantly updates pointers into the buffer that point to the I frames of every channel. Accordingly, in a network in which there is insufficient bandwidth to transmit all of the available channels from the central office to the viewer, when the central office BTD receives a request from a viewer to change the channel to a new channel that was not being previously transmitted to the viewer, the BTD accesses the corresponding pointer to instantaneously access the last I frame of the requested channel and begin transmission to the viewer from that frame.

This has essentially nothing to do with the present invention. In Mao, nothing is being stored locally at the customer's location. In Mao, the customer does not receive a small sample snippet of the channel data stream prior to receiving the true, real-time data stream corresponding to that channel. In Mao, the BTD is at the central office, not at the viewer's location. Finally, in Mao, the BTD (which is the component the Office relies upon in the rejection) is receiving all of the channels from the ATM network, not just one. The stored data that the Office is relying on as corresponding to the stored samples of the present invention is nothing more than the data streams of themselves.

Mao is simply buffering the data streams at the BTD. At the BTD, there is no need to choose which data stream to receive. The connection between the BTD and the ATM network is sufficient to carry all of the streams. It is only after the BTD that a single channel must be chosen for transmission to the viewer's home.

Turning now to the claim language that distinguishes over the prior art, Applicant has herein amended the claims substantially to improve their form, grammar and structure, to cancel repetitive, prolix, or otherwise unnecessary claims, and to make the claim set more manageable. Accordingly, while the claim set has been substantially revised, the distinctions over the prior art are essentially the same in the new claim set as in the original claim set.

For instance, independent claims 1 and 8 clearly distinguish over Mao at least by virtue of the fact that they both recite "storing said samples in a memory non-contiguously in time with said data streams". This language cannot be read on Mao's simple buffering of the data streams as asserted by the Office because the data stored in the BTD buffer comprises the actual data streams. Hence, the samples are not non-contiguous with the data stream that they represent. They are the data streams.

Independent claim 53 likewise recites "a memory associated with said node for storing said samples non-contiguously with said data streams to which they correspond".

The dependent claims add many more limitations that are not found in the prior art of record. However, given the fundamental flaw in the Office's reliance on Mao as teaching the basic invention, a detailed review of those distinctions is unnecessary. All of the dependent claims distinguish over the prior art for at least the same reasons given with respect to the independent claims from which they depend. The secondary references do not add the fundamental teachings lacking from Mao and therefore, the

issue of whether they contain the teachings for which they have been cited and/or whether the proposed combinations are suggested in the art are not even reached. Nevertheless, it should now be clear in view of the fact that Mao teaches a system that is fundamentally different than originally perceived by the Office, that the alleged motivations for all of the proposed combinations of Mao with the secondary references are inoperative.

In view of the foregoing amendments and remarks, this application is now in condition for allowance. Applicant respectfully requests the Office to issue a Notice of Allowance at the earliest possible date. The Examiner is invited to contact Applicant's undersigned counsel by telephone call in order to further the prosecution of this case in any way.

Respectfully submitted,

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Dated

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